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EXAMINER KIM, HEE-YONG				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/527,722

## Applicant(s)

HAHN ET AL.

## Examiner

HEE-YONG KIM

## Art Unit

4192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S5/ICE)  
Paper No(s)/Mail Date 07/03/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

Claim 12 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language.

Claims cite "and/or" which are indefinite.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1, 8, 18-19, and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashihara (US patent 5,883,739) in view of Tsuji (US patent 6,327,536), hereafter referenced as Ashihara and Tsuji respectively.

Regarding claim 1, Ashihara discloses Information Display Device for Vehicle. Ashihara specifically discloses *having at least two night vision capable cameras* ("Two video cameras for generating left-viewpoint image and right-viewpoint image" in abstract and "dark field two-tube video camera when running at night" in column 5 and line 67 in the specification) *that are fitted on the vehicle at a spacing from one another in such a way that a stereoscopic recording is made of the driving path situated in front of the vehicle and reproduce them optically for the driver, wherein means are present*

*that generate for the driver a stereoscopic reproduction of the image signals.* But he fails to disclose *having means which condition the image signals of the night vision capable cameras.* However the examiner maintains that it was well known in the art to provide *having means which condition the image signals of the night vision* as taught by Tsuji.

In the similar field of view Tsuji discloses Vehicle Environment Monitoring System. Specifically Tsuji discloses *the conditioning of the image signal* (Emphatic Image) at the figure 4 and 21B and also line 39-47 of column 13 (object is emphatically displayed for example by enclosing an object in a frame). He also discloses that the motivation is to enable the driver to positively recognize an object having a high possibility of collision in the same paragraph.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Ashihara by providing *having means which condition the image signals of the night vision*, as taught by Tsuji, for the purpose of warning a driver of danger.

Regarding claim 8, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1). Ahihara further discloses *wherein the means for generating a stereoscopic reproduction has elements that illuminate image reproduction display (for example LCD displays) (LCD display in Figure 4 and 5, and the column 5, line 4-20) in a structured fashion (Parallax illumination) (Parallax barrier in Figure 2).*

Regarding claim 18, Ahihara and Tsuji disclose everything claimed as applied above (see claim 1). Tsuji further discloses *wherein the conditioning of the image*

*signals of the night vision capable cameras includes the detection (Warning determination process in Figure 4) and optical accentuation of objects in the driving direction (Display Emphasis by Enclosing an object by square frame at Figure 21B).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Ashihara by providing *wherein the means for generating a stereoscopic reproduction has elements that illuminate image reproduction display*, as taught by Tsuji, for the purpose of warning a driver of danger.

Regarding claim 19, Ahihara and Tsuji disclose everything claimed as applied above (see claims 18). Tsuji further discloses *wherein the optical accentuation of the objects is performed by marking (for example coloring, contrasting, flashing) (Display Emphasis by Enclosing an object by square frame at Figure 21B).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Ashihara by providing *wherein the optical accentuation of the objects is performed by marking (framing object)*, as taught by Tsuji, for the purpose of warning a driver of danger.

Regarding claim 21, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1). In addition Ashihara discloses *wherein in addition to the three-dimensional reproduction image components are also reproduced in a two-dimensional display (capable of displaying video not only in three dimension but also in usual two dimensions) at line 62, column 6 9, to line column 7.*

Regarding claim 22, Ahihara and Tsuji disclose everything claimed as applied above (see claim 21). Ashihara further discloses *wherein the driving control parameters*

(speed, rotational speed etc) (velocity, or acceleration ) and navigation information (for example GPS) (position) are reproduced as image components in a two-dimensional display at the claim 3.

Claim 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashihara and Tsuji in view of Newsanger (US patent 4,799,739), hereafter referenced as Newswanger.

Regarding claim 2, Ahihara and Tsuji disclose everything claimed as applied above (see claim 1), but fail to disclose *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions*. However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions* as taught by Newswanger.

In the similar field of view Newswanger discloses Real Time Autostereoscopic Display Using Holographic Diffusers. Specifically Newswanger discloses the *holographic optical element* projected at *different angle* at column 2, line 52-61. Ashihara implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions* as taught by Newswanger.

Regarding claim 3, Ahihara and Tsuji disclose everything claimed as applied above (see claim 1), but fail to disclose *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of optical diffraction (for example diffractive optical elements, gratings, holographic elements)*. However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of optical diffraction (for example diffractive optical elements, gratings, holographic elements)* as taught by Newswanger.

Newswanger discloses *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of optical diffraction (for example diffractive optical elements, gratings, holographic elements)* (Holographic optical element) at column 2, line 52-61. Ashihara implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara with *means of optical diffraction (holographic element)* as taught by Newswanger.

Claim 4-7, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashihara and Tsuji in view of Pastoor (3-D displays: A review of current technologies), hereafter referenced as Pastoor.

Regarding claim 4, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fail to disclose *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of optical refraction*. However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of optical refraction* as taught by Pastoor.

In the similar field of view Pastoor discloses the *refraction-based approaches* at the chapter 5.5 at the page 105. Ashihara implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara and Tsuji with *means of optical refraction*, as taught by Pastoor.

Regarding claim 5, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fail to disclose *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of reflection*.

However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of reflection (for example retroreflectors, partially reflecting elements)* as taught by Pastoor.



In the similar field of view Pastoor discloses the *reflection-based approaches* at the chapter 5.6 at the page 107. Ashihara implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara and Tsuji with *means of reflection*, as taught by Pastoor.

Regarding claim 6, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fails to disclose *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of exclusion (for example barrier grid, color mask)*. However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction has elements that project image components in different spatial directions by means of exclusion* as taught by Pastoor.

The examiner maintains that *occlusion* is a right word for *exclusion* in the claim. In the similar field of view Pastoor discloses the *Occlusion-based approaches* at the chapter 5.7 at the page 107. Ashihara implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara with *means of occlusion*, as taught by Pastoor.

Regarding claim 7, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fails to disclose *wherein the means for generating a stereoscopic reproduction have elements that separate image components optically as a function of time*. However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction have elements that separate image components optically as a function of time* as taught by Pastoor.

In the similar field of view Pastoor discloses the *time-multiplexed display* at the chapter 4.3 at the page 102. Ashihara implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara and Tsuji with *time-multiplexed display* as taught by Pastoor.

Regarding claim 15, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fails to disclose *wherein the means for generating a stereoscopic reproduction have elements that are worn by the driver (for example polarization or color filter spectacles, mini displays, etc.)*. However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction have elements that are worn by the driver (for example polarization or color filter spectacles, mini displays, etc.)* as taught by Pastoor.

In the similar field of view Pastoor discloses the *Polarization-multiplexed display* (the observer wears polarization glass) at the chapter 4.2 at the page 102. Ashihara

implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara and Tsuji with *polarization-multiplexed display*.

Regarding claim 16, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fails to disclose *wherein the means for generating a stereoscopic reproduction have swinging or rotating displays*.

However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction have swinging or rotating displays* as taught by Pastoor.

In the similar field of view Pastoor discloses the *rotating display* (rotating projection screens) at the page 104. Ashihara implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara and Tsuji with *rotating display*.

Regarding claim 17, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fails to disclose *wherein the means for generating a stereoscopic reproduction have volumetric displays in which individual spatial points are excited to emit light by means of laser radiation, for example*.

However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction have volumetric displays in which individual spatial points are excited to emit light by means of laser radiation, for example as taught by Pastoor.*

In the similar field of view Pastoor discloses the *Volumetric display* at the chapter 5.2 at the page 103 and 104. Ashihara implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara and Tsuji with *Volumetric display* as taught by Pastoor.

Claim 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashihara and Tsuji 1 in view of Furness (US patent 6,317,103,), hereafter referenced as Furness.

Regarding claim 9, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fails to disclose *wherein the means for generating a stereoscopic reproduction have scanning laser systems and electrooptic modulators.* However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction have scanning laser systems and electrooptic modulators* as taught by Pastoor.

In the similar field of view Furness discloses Virtual Retinal Display Method for Tracking Eye Position. Specifically Furness discloses the electrooptic modulator (14)

and laser scanner (16) in Figure 1. Ashihara implements LCD with a parallax barrier as stereoscopic display, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara and Tsuji with the *scanning laser and electrioptic modulator* as taught by Furness.

Regarding claim 11, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fails to disclose *wherein the means for generating a stereoscopic reproduction have elements that projects image components directly onto the driver's retina*. However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction have elements that projects image components directly onto the driver's retina* as taught by Furness.

In the similar field of view Furness discloses Virtual Retinal Display Method for Tracking Eye Position. Specifically Furness discloses Retinal Display Method in Figure 1 and 2, also in the abstract (directly onto the retina of the user's eye). Ashihara illustrates a lenticular lens type stereoscopic display in Figure 6 and 7, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara and Tsuji with the spectroscopic image *generation onto the retina as taught by Furness*.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ashihara and Tsuji in view of Aye (US patent 5,886,675), hereafter referenced as Aye.

Regarding claim 10, Ahihara and Tsuji disclose everything claimed as applied above (see claims 1), but fails to disclose *wherein the means for generating a stereoscopic reproduction have two projectors that emit image components in an angularly selective fashion*. However the examiner maintains that it was well known in the art to provide *wherein the means for generating a stereoscopic reproduction have at least two projectors that emit image components in an angularly selective fashion* as taught by Aye.

In the similar field of view Aye discloses Autostereoscopic display system with fan-out multiplexer. Specifically Aye discloses two projectors at figure 3 and diffraction with *angular* and wavelength *selectively* at column 6, line 32-34. Ashihara illustrates a lenticular lens type stereoscopic display in Figure 6 and 7, but it can be substituted for another among many existing stereoscopic display types.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention could have substituted the display element of Ashihara and Tsuji with two projectors emitting in angularly fashion as taught by Aye.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ashihara and Tsuji in view of Eichenlaub (US patent 5,606,455), hereafter referenced as Eichenlaub.

Regarding claim 12, Ahihara and Tsuji disclose everything claimed as applied above (see claim 1), but fail to disclose *wherein means are present which detect the head and/or eye position or direction of view of the driver and drive the means for*

*generating a stereoscopic reproduction as a function of the detected head and/or eye position or direction of view.*

However the examiner maintains that it was well known in the art to provide *wherein means are present which detect the head and/or eye position or direction of view of the driver and drive the means for generating a stereoscopic reproduction as a function of the detected head and/or eye position or direction of view* as taught by Eichenlaub.

In the similar field of view Eichenlaub discloses Autostereoscopic Display with High Power Efficiency. Specifically Eishenlaub discloses *tracking head position* (means for tracking the position of head) and *auto-stereoscopic image generation* based on head position (limitation regarding the position of the head are substantially removed) at column1 and line 50 and 55.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Ashihara and Tsuji by providing *tracking head position and stereoscopic generation based on the head position* for the purpose of generating stereoscopic image without head position restriction, as taught by Eichenlaub, for the purpose of being free of position limitation.

Regarding claim 13, Ahihara and Tsuji and Eichenlaub disclose everything claimed as applied above (see claim 12). In addition Eishenlaub discloses *wherein the head and/or eye position or direction of view of the driver is detected via cameras, ultrasound or infrared detectors fitted in the interior of the vehicle* (infrared camera) at column 8 and line 44.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Ashihara and Tsuji by providing *wherein the head and/or eye position or direction of view of the driver is detected via cameras* (infrared camera) for the purpose of generating stereoscopic image without head position restriction, as taught by Eichenlaub, for the purpose of being free of position limitation.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ashihara and Tsuji and Eichenlaub in view of Street (US patent 5,712,732), hereafter referenced as Street.

Regarding claim 14, Ahihara and Tsuji and Eichenlaub disclose everything claimed as applied above (see claim 12), but fail to disclose *wherein the means for generating a stereoscopic reproduction are driven in such a way that a movement parallax results*.

However the examiner maintains that it was well known in the art to provide *wherein means are present wherein the means for generating a stereoscopic reproduction are driven in such a way that a movement parallax results* as taught by Street.

In the similar field of view Street discloses Autostereoscopic Image Display Adjustment for Observer Location and Distance. Specifically Street discloses providing movement parallax at column 6, line 49-52.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Ashihara and Tsuji and Eichenlaub by providing



*movement parallax* for the purpose of generating different views of scenes in response to movement of the viewer.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ashihara and Tsuji in view of Shapiro (US patent 5,777,720), hereafter referenced as Shapiro.

Regarding claim 20 Ashihara and Tsuji disclose everything claimed as applied above (see claims 18). However Ashihara and Tsuji fail to disclose *wherein the optical accentuation of the objects is performed by varying the apparent position (for example distance) in the stereoscopic reproduction*. However the examiner maintains that it was well known in the art to provide *wherein the optical accentuation of the objects is performed by varying the apparent position (for example distance) in the stereoscopic reproduction* as taught by Shapiro.

In the similar field of view Shapiro discloses Method For Creating a 3-D Image Of Terrain and Associated Weather. Specifically Shapiro discloses providing a fly by of projected storm or severe weather paths and display in 3-D at the line 59-63 of the column 1. It is evident that the motivation is to warn the audience of the danger ahead by visualizing a possible disaster.

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Ashihara and Tsuji and Eichenlaub and Street by providing visualization(*varying the apparent position*), as taught by Shapiro, for the purpose of warning a driver of danger.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEE-YONG KIM whose telephone number is (571)270-3669. The examiner can normally be reached on Monday-Thursday, 8:00am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Harold can be reached on 571-272-7519. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HEE-YONG KIM/  
Examiner, Art Unit 4192

H.K  
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